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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,700	08/28/2001	Toshiki Tanaka	826.1746	4440

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EXAMINER
CUNNINGHAM, STEPHEN C

ART UNIT	PAPER NUMBER
3663	

DATE MAILED: 06/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/939,700	TANAKA ET AL.
	Examiner	Art Unit
	Stephen C. Cunningham	3663

-- Th MAILING DATE of this communication appears on the cover sheet with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4,5,11-13,15 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4,5,11-13,15 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *03 March 2003* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 15 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

   Claims 15 and 16 are rejected because they state "determining power of each of the pump lights in the Raman amplifier at the first optical terminal station." This is indefinite because it fails to claim what the Applicants regard as their invention. For example, figure 21 shows that the power of the pumping lights for each of the Raman amplifier is detected using back-facet monitors at the location of the control unit, rather than at the terminal station. The power of the pumping lights is not detected at the terminal station, but rather is transmitted to the terminal station by the control unit. This renders the claim indefinite.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 4, 5, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namiki et al. (2001/0050802) (Namiki) in view of Kidorf et al. (6,052,219) (Kidorf).

With respect to claim 4 and 5, Namiki teaches an optical transmission system where a plurality of Raman amplifiers (see 0019) are positioned on an optical transmission line, and each of the Raman amplifiers uses a plurality of pump lights (see oo58) wherein when a power of a pump light having a first wavelength among the plurality of pump lights drops to a predetermined level or lower (Namiki refers to this as "failure") in a first Raman amplifier among the plurality of Raman amplifiers, power of a pump light having the first wavelength or a wavelength that is substantially the same as the first wavelength is raised in one or some of the plurality of Raman amplifiers other than the first Raman amplifier (see 0069 and 0072), and/or (with respect to claim 5), the power of a pump light having a wavelength adjacent to the first wavelength is raised in the first Raman amplifier (see 0169, describing how when pump 8 fails, pump 7 is activated to compensate for the failure).

Kidorf teaches an optical transmission system wherein a plurality of optical amplifiers amplify optical signals on a system including a first and a second optical transmission line. It would have been obvious to modify the apparatus, of Namiki, by providing a second transmission line transmitting signals counter-directionally to first transmission line in order to information to be transmitted in both directions.

With respect to claim 13, Namiki teaches that each of the Raman amplifiers in the system can be Raman amplifiers according to the disclosure therein. Furthermore, Namiki teaches that the multiplexers are selected and arranged so that an average characteristic of the multiplexers becomes a predetermined characteristic ever predetermined number of Raman amplifiers; and power of the pumping light is raised in the predetermined number of Raman amplifiers. The power is raised to ensure that the target performance is met. This is the goal of the controller, and the purpose of the Namiki control system. Additionally, it is inherent that the multiplexers have a predetermined value in each group of amplifiers because it is necessary for one to select the multiplexers to use in the system, which would inherently entail pre-selecting the characteristics of the multiplexers. Thus, because no matter how many amplifiers are present in the system, be it two, or one hundred, the multiplexers would always have a predetermined characteristic, based on the fact that the system must be created before it is used, and therefore some one or thing must select the components to use. By selecting the multiplexers, there is an inherent choice of the multiplexer characteristics.

2. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namiki et al. (2001/0050802) (Namiki) in view of Kidorf et al. (6,052,219) (Kidorf) as applied to claim 4 above, and further in view of Foursa (2002/0075560) (Foursa).

Regarding claim 11, Namiki in view of Kidorf fails to teach that the transmission line accommodates "m" optical fibers; and "m" pumping lights having different wavelengths are multiplexed in each of the Raman amplifiers, and a multiplexed pump light is respectively provided to the "m" optical fibers. Such is well known in the art and is shown in the Foursa publication. See for example, fig. 4; paragraph 0039. It would have been obvious to one of ordinary skill in the art at the time of invention by Applicant to employ the pumping configuration of Foursa to the amplifier of Namiki because such would enable a designer to increase the system bandwidth by, for example (as shown in fig. 4 of the Foursa reference), four times.

Regarding claim 12, Namiki does teach a polarization coupled light is obtained by polarization coupling two pump lights, which is further multiplexed by a multiplex. Namiki does not teach that the Raman amplifier comprise a multiplexer having both "m" input ports and "m" output ports. This is taught by the Foursa reference. See the discussion of claim 11, above, which is hereby incorporated by reference in its entirety.

3. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namiki et al. (2001/0050802) (Namiki) in view of Wu et al. ('921) (Wu).

Regarding claims 15 and 16, the teachings o Namiki have been discussed above with respect to claims 4 and 5, which is herby incorporated by reference in its entirety. Namiki teaches that the control unit may send wavrious operating

parameters to the network control system. See, e.g., figs. 5, 10. Namiki does not teach that the power of each of the pump lights in the plurality of the Raman amplifier is detected by the first optical terminal station. This limitation has been rejected as being indefinite for failing to distinctly claim what the applicant regards as his or her invention, and will be interpreted in light of the disclosure.

Wu teaches that information on the pump powers, which are inherently determined by back facet monitors (see fig. 7, 80) may be relayed over a telemetry channel to a network control and management station, which is located at a terminal station. See, e.g., column 6, line 54 to column 8, line 12.

Kidorf teaches an optical transmission system wherein a plurality of optical amplifiers amplify optical signals on a system including a first and a second optical transmission line. It would have been obvious to one of ordinary skill in the art at the time of invention by Applicant to modify the apparatus, of Namiki, by providing a second transmission line transmitting signals counter-directionally to first transmission line in order to information to be transmitted in both directions; and to further modify the apparatus to include a controller that communicated the detected pump powers over to a first terminal station because such is well known in the art and allows for more effective system monitoring and further allows the pumps of adjacent amplifiers to be controlled in the event of a pump failure, as described in the Namiki reference.

Response to Argum nts

Applicant's arguments with respect to claim4, 5, 11-13, 15, and 16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.